

We claim:

1. A microchip device array for the controlled release or exposure of reservoir contents comprising:

two or more microchip device elements, each of which includes a plurality of reservoirs which contain molecules for controlled release or components for selective exposure; and

a means for flexibly connecting said device elements, so as to form a flexible array which can conform to a curved surface.

2. The microchip device array of claim 1, wherein the means for flexibly connecting comprises a flexible supporting layer attached to a surface of the device elements.

3. The microchip device array of claim 2, wherein the flexible supporting layer comprises a polymer.

4. The microchip device array of claim 3, wherein the polymer is selected from the group consisting of polyimides, polyesters, parylenes, and hydrogels.

5. The microchip device array of claim 1, wherein the flexible supporting layer is porous or permeable to molecules releasable from the reservoirs or provided with one or more apertures through said flexible supporting layer.

6. The microchip device array of claim 1, wherein the means for flexibly connecting comprises one or more hinges or flexible tethers connecting two or more of the device elements.

7. The microchip device array of claim 1 for implantation onto or into a patient, wherein the array can conform to the curvature of a tissue surface.

8. The microchip device array of claim 7 for implantation into or onto the eye of the patient, wherein the tissue surface comprises ophthalmic tissue.

9. The microchip device array of claim 7, wherein the tissue surface is selected from the group consisting of the stratum corneum, mucosal membranes, blood vessels, bone, brain, and bladder.

10. The microchip device array of claim 1, wherein the microchip device elements comprise reservoir caps over the reservoirs.

11. The microchip device array of claim 1 further comprising a means for wirelessly communicating with the microchip device elements.

12. The microchip device array of claim 11, wherein the communicating means comprises a photocell to receive incident light energy.

13. The microchip device array of claim 1 further comprising an energy storage means.

14. The microchip device array of claim 13, wherein the energy storage means comprises a capacitor, a battery, or both.

15. The microchip device array of claim 1 further comprising electrical connections between two or more of the microchip device elements, such that the microchip device elements can be powered or controlled by a common energy source or control source, respectively.

16. The microchip device array of claim 1, wherein the reservoirs contain drug molecules.

17. The microchip device array of claim 1, wherein the reservoirs contains one or more secondary devices for exposure.

18. The microchip device array of claim 17, wherein the secondary device comprises a sensor.

19. The microchip device array of claim 18, wherein the sensor is a pressure sensor or a chemical sensor.

20. The microchip device array of claim 1, wherein the microchip device elements comprise reservoirs which contain drug molecules and at least one reservoir which contains a sensor.

21. The microchip device array of claim 1, wherein the reservoirs contain molecules selected from the group consisting of diagnostic reagents, catalysts, combinatorial chemistry precursors, and fragrance molecules.

22. The microchip device array of claim 1, wherein the electrical traces are built into the means for flexibly connecting said device elements.

23. The microchip device array of claim 1, which comprises flexible, passive release device elements.

24. The microchip device array of claim 7, which enhances the patency of a tissue lumen or other organ structure in the patient.

25. A method for delivering drug molecules to a patient, the method comprising:

implanting into or onto a tissue surface of the patient the microchip device array of claim 16; and

selectively releasing from one or more of the reservoirs an effective amount of the drug molecules.

26. The method of claim 25, wherein the microchip device is implanted onto or into the sclera or another surface of the eye of the patient.

27. The method of claim 25, wherein the release of drug is activated wirelessly.

28. The method of claim 27, wherein the activation is by application of light to the microchip device array.

29. The method of claim 28, wherein the light is from a laser source.

30. The method of claim 29, wherein the laser light removes or permeates one or more reservoir caps which cover the reservoirs.

31. The method of claim 25, wherein the tissue surface is selected from the group consisting of the stratum corneum, mucosal membranes, blood vessels, bone, brain, and bladder.

32. A method for sensing a molecule or physical property at a site, the method comprising:

implanting at a site the microchip device array of claim 18; and selectively exposing at least one sensor of the sensors to molecules or a property at said site, thereby permitting said at least one sensor to sense said molecules or property.

33. A method for sensing a molecule or physical property on or in the eye of a patient, the method comprising:

providing a microchip device having a plurality of reservoirs containing sensors;

implanting the microchip device at a site in or on the eye of the patient; and

selectively exposing one or more of the sensors to molecules or a property at said site.

34. The method of claim 33, wherein the sensor comprises a pressure sensor and wherein the condition is intraocular pressure.

35. The method of claim 33, wherein the sensor comprises a chemical sensor.

36. The method of claim 33, wherein the selective exposure of the sensor is activated wirelessly.

37. The method of claim 36, wherein the activation is by application of light to the microchip device.

38. The method of claim 37, wherein the light is from a laser source.

39. The method of claim 38, wherein the laser light removes or permeates one or more reservoir caps which cover the reservoirs.

40. The method of claim 33, wherein the microchip device comprises a microchip device array comprising two or more microchip device elements, each of which includes a plurality of reservoirs which contain molecules for controlled release or components for selective exposure, and a means for flexibly connecting said device elements, so as to a flexible array which can conform to a curved surface of the eye.

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